FIRM NAME Ozadco Pool Co.

ADDRESS 540 W. McDaniel TELEPHONE 865 1737

PERSONNEL CONTACTED Dan Vanderbrink POSITION Manager

POSITION

POSITION

ACTION INITIATED BY:

1) 1-23-73 - Letter from Joe Allen (Air pollution) to K. Beardsley (Thompson-Hayward Chemical Co) concerning Tank installation
2) 2-15-73 - literature on handling Muriatic Acid, Tank, piping etc.
3) 2-22-73 - inter-office to Willard Sharp (fire dept.) from C. Criswell
4) 2-23-73 - Letter to Vanderbrink from Joe Allen concerning Tank installation
5) 2-27-73 - Letter to Vanderbrink from Willard Sharp concerning Tank installation
6) 3-2-73 - " Letter to Vanderbrink from C. Criswell about Tank, and drainage

540 W. McDANIEL

SPILL OF ALGAECIDE OZADO POOL - 8-14-75

Sodium dichloro-S-triazine trione dihydrate 71.5%

Simazine: 2-chloro-4, 6-bis-(ethylamino)-S-triazine 12%

Inert ingredients 16.5%

40% Available Chlorine

(Granular Algicide)

Spill at Ozadco Pool Co. 8-14-75 2:30 P.M.

540 W. McDaniel

March 2, 1973

Mr. Don VandenBrink
Manager, Ozadco Pool Company
540 West McDaniel Street
Springfield, Missouri 65806

Dear Don:

As we discussed, the only recommendations this office will make are those relating to an entrapment area to preclude accidental discharge into either the sanitary or storm sewer system. This should consist of a depression large enough to hold the entire contents of the tank, and a raised edge in addition tc prevent lateral runoff. This should be filled to ground level (not lip level) with a medium to coarse grade of limestone rock. The bottom should not be sealed so that the neutralized acid could percolate out if a spill or rupture does occur. Cleanout and disposal might be a problem otherwise.

The specifications Ken Beardsley sent mention a vent pipe to be run down into the gravel bed. I would suggest a small separate compartment for this so that periodic replacement of the entire entrapment medium will not be necessary. You could easily replace a separate, small amount fairly often, and still be assured that your main neutralization entrapment dike was not in degraded condition.

In order that you be sure you are protected, you should either have an engineer or your suppliers furnish you with some accurate sizing data, considering the quantity and strength of the acid, and the neutralizing capacity of limestone.

One more thing that you should be aware of, as Joe Allen pointed out in his letter, regardless of any permit or verbal or written approval for any installation from any of the involved agencies, this does not in any way, exempt the owner from possible future legal action in the event of serious leakage or other discharge problems resulting after installation.

540 W. McDANIEL

If we can be of any further assistance or can answer any questions you or Ken might have, please do not hesitate to call.

Yours very truly,

Charles H. Criswell
Chemist and Aquatic Biologist
Industrial Waste Surveillance & Enforcement

CHC:cc

cc: Mr. Willard Sharp, Fire Marshal, City of Springfield
Mr. Joe Allen, Coordinator, Air Pollution Control Authority
Mr. Steve Decker, Regional Engineer, Missouri Clean Water Commission

February 27, 1973

Mr. Don Vanderbrink, Manager
Ozadco Pool Company
540 West McDaniel
Springfield, Missouri

Dear Mr. Vanderbrink:

The plans submitted to this office have been reviewed and it seems to be a comparatively safe operation. However, there were no specifications for a dike or a bund around the tank.

Hydrochloric acid or muriatic acid is listed in the hazardous chemical manual of the National Fire Protection Association as not combustible but contact with common metals produces hydrogen which may form explosive mixtures with air. It is not considered a fire hazard per-se but could be dangerous if it is in or adjacent to a building involved in fire. It is required that the container be marked with a zero at the apex of a triangle indicating no flammable product, a zero at the right of the triangle showing no reactive agent, and the number -3- showing the degree of health hazard on the left of triangle.

The flammable liquid storage tank located underground behind the building of concern shall be removed before the installation of muriatic tank. The dike around the tank shall be large enough to hold the contents of the container.

If there are any questions regarding these requirements, please contact this office.

Respectfully,

Willard Sharp

Willard Sharp
Fire Marshal

WS/nvc

cc: Joe Allen, Air Pollution Control
Charles Crisswell, Public Works, City Hall

540 W. McDANIEL

February 23, 1973

Mr. Don Vanderbrink
Manager
Ozadco Pool Company
540 West McDaniel
Springfield, Missouri

Dear Mr. Vanderbrink:

We have received the information which you have sent to this office concerning the proposed installation of a tank for storing muriatic acid at the Ozadco Pool Company.

As a result, we can find no conflicts with existing air pollution control standards with respect to such an installation -- provided that a leak proof valve is used and the tank is properly vented into a neutralizing compound.

Although Springfield's Air Pollution Control Ordinance does not require a permit for that type of installation, this does not, in any way, exempt the owner from possible future legal action in the event of serious leakage or other dischargesproblems resulting after installations.

If you have any question concerning this letter, please feel free to contact this office. The telephone number is 869-1472.

By the Direction of Jack V. Newman, Director of Health.

Very truly yours,

Joe Allen
Coordinator of Air Pollution Control

JA/m

cc: Willard Sharp
Harry Caswell

540 W. McDaniel

CITY OF SPRINGFIELD
INTER-OFFICE MEMORANDUM

ATTENTION OF Mr. Willard Sharp DATE February 22, 1973

DEPARTMENT Fire Department

Re: Ozadco Pool

Willard:

Enclosed for your review and comment is a copy of Ken Beardsley's letter and data to Joe Allen. The "muriatic acid" they will be handling, according to the Baume scales, is 31.45% hydrochloric acid. The maximum strength for hydrochloric is roughly 36 or 37%.

Would you like for the three of us to meet and put our recommendations in one letter, or would you prefer to write him separately?

CHC:cc

Enclosure

SIGNED ~~Charles H. Griswell~~
Chemist and Aquatic Biologist
Industrial Waste Surveillance & Enforcement

540 W. McDANIEL

January 23, 1973

Mr. Kenneth Beardsley
Thompson-Hayward Chemical Company
P.O. Box 305
Kansas City, Missouri 64141

Dear Mr. Beardsley:

This morning I briefly discussed, with the manager of the Ozadco Pool Company, his intent of possibly acquiring a hydrochloric acid bulk tank from your firm. In order to determine the air pollution potential of such an installation, I am requesting information concerning the proposed installation. I am especially concerned about the methods of filling the tank and design features for keeping vapor losses to a minimum. Also, any standards your company may have for the location of such a unit.

Thank you for your cooperation in this matter.

By the Direction of Jack V. Newman, Director of Health.

Very truly yours,

Joe Allen
Coordinator of Air Pollution Control

JA/m

cc: Willard Sharp
Harry Criswell
Manager, Ozadco Pool Company

540 W. McDANIEL

THOMPSON-HAYWARD CHEMICAL COMPANY

P.O. Box 2383
5200 Speaker Road
Kansas City, Kansas 66110
(913) 321-3131

Mr. Allen -

Here is a complete set of information literature for Muriatic Acid, bulk handling, piping, etc. Hope this will be helpful for the City of Springfield usage to give an OK to Orpadco Pool Co for installation of said tank. If any further help please call me collect at above No.

Sincerely
Kenneth Bradley

MURIATIC ACID HANDLING AND STORAGE

Handling Precautions

Since muriatic acid is a corrosive and hazardous liquid, it is suggested that a man be in attendance at all times when tank cars or tank trucks of muriatic acid are being unloaded. It is recommended that the following safety practices be observed when handling muriatic acid:

1. Do not allow the use of open fires, open lights, and matches in or around muriatic acid equipment as there may be hydrogen present due to action of acid on iron.
2. Protective clothing such as acid proof goggles, rubber gloves, rubber shoes, rubber aprons and woolen clothing should be worn for protection from spills and splashes.
3. Any acid handling equipment should be thoroughly washed with water before any repairs are attempted.
4. Muriatic acid is highly corrosive and contact with skin or eyes may lead to serious injury. The breathing of acid vapors should be avoided. Acid on any part of the body should be washed off immediately with large volumes of water. Safety showers designed for all year service should be conveniently located for this purpose. If eyes are splashed, immediately flush with sodium bicarbonate solution on large volumes of water and consult a physician as soon as possible.
5. Acid spilled on walkways or equipment should be washed off immediately with large volumes of water. After washing, the affected area should be lightly dusted with soda ash or other weakly alkaline material to neutralize any remaining acid.

Unloading

No bottom outlet is allowed on acid cars. Either a pump or compressed air is used to unload the tank car through a discharge pipe which extends from the dome to a well in the bottom of the tank car.

Figure 1 illustrates a typical layout for unloading muriatic acid with air pressure. No auxiliary pumps are necessary in this arrangement. However, it has several limitations. The storage tank must be located so that the acid may flow by force of gravity from storage to process. Furthermore, the highest point in the unloading line and storage tank cannot be more than 45 feet above the bottom of the tank car since the maximum allowable pressure in the tank being unloaded is 30 pounds per square inch.

A layout employing a self-priming pump to transfer the acid from the tank car to storage and storage to process is shown in Figure 2. This system is used when the point of use is above storage tank level or where the storage tank discharge line is too long to make gravity flow practical. Also in this design there are no connections to the bottom of the storage tank which would be hard to repair if leaks developed.

When using a self-priming pump, it is necessary to open the vent on the tank car and to make certain that there are no leaks in the suction line.

Whenever acid is being unloaded, the receiving tank should be vented to avoid developing pressure in the tank. The free capacity of the tank should be measured to avoid over filling and loss of acid.

540 W. McDANIEL

Care of Tank Car Fittings

The interior and fittings of muriatic acid tank cars are rubber lined. For this reason extreme care is necessary in the removal and replacement of all dome fittings and for the proper care of such fittings during loading and unloading operations.

The principal dome fittings are:

A. Acid discharge pipe (closed with rubber-lined flange).
B. Air connection or vent (closed in most cases with a hooded fitting chained to the dome cover, which includes a rupture disc designed to rupture if the pressure in the car exceeds 30 lbs. per sq. in. during transportation. Care should be taken not to puncture this disc.)

Removal and replacement of fitting should be made with a well fitting wrench. When unloading do not remove the acid pipe flange until all pressure in the car has been released through the air vent.

When unloading is completed disconnect all lines. Make sure delivery line is completely drained. If any acid is spilled on the car, wash off immediately. Dust the flange of the acid pipe with graphite and replace the cover. Tighten all bolts with a wrench. This will seal the opening so no acid fumes will escape. The air vent is closed in the same manner, care being taken to insure that the rupture disc is intact. If the disc is broken or missing, acid fumes will escape and corrode the fittings.

It is recommended that the procedures outlined in the Manufacturing Chemists' Association manual sheet TC-2 be followed.

MURIATIC ACID STORAGE AND HANDLING

Materials of Construction

STORAGE TANK

Tank

Cylinderical welded steel with standard ASME dished heads.
ASTM A 233 Grade C flange quality steel for shell.
ASTM A 285 Grade C flange quality steel for heads.
Fiber-glass reinforced plastic.

Liner

Soft rubber, strong acid resistant (160° F. max. temperature), 3/16 inch. (Other liners: glass, phenolic resins, epoxy resins, polyester, PVC)

Tank Fittings

Flanged manhole, 18 inches or 24 inches, rubber lined.
Filling nozzle, 3 inch flanged, rubber lined.
Vent nozzle, 1 1/2 inch flanged, rubber lined.
Unloading nozzle, 4-inch flanged, rubber lined (for top unloading).
Drain or Bottom unloading nozzle, 3 inch flanged, rubber lined.
Gauging device, float operated, sight, or pneumatic pressure balance type.

Lined Steel Tank Suppliers

U. S. Rubber Co., 4300 New Haven Avenue, Fort Wayne, Indiana
American Car & Foundry Co., 30 Church Street, New York, New York
B. F. Goodrich Co., Industrial & General Products Division, 448 South Main Street, Akron, Ohio
Graver Tank & Mfg. Co., 6300 Tod Avenue, East Chicago, Indiana
Tank Lining - G. A. Mosites Co., P.O. Box 2115, Fort Worth, Texas
The Gates Rubber Co., 1001 South Broadway, Denver, Colorado

Plastic Tank Suppliers

Haveg Industries, Inc., Chemical Equipment Division, 900 Greenbank Road, Wilmington, Delaware 19808
Amercoat Corporation, Industrial Airpark, Ardmore, Oklahoma

PIPING

Rubber-lined steel
Fibercast (Fibercast Company, Sand Springs, Oklahoma)

PIPING (Continued)

Pressure - Suction rubber hose (Goodyear Tire & Rubber Company, 1144 East Market Street, Akron, Ohio), (Boston Woven Hose & Rubber Company, 29 Hampshire Street, Cambridge, Massachusetts).
Polyvinyl Chloride (U. S. Rubber "Uscalite"; Triangle Conduit & Cable Company, New Brunswick, New Jersey) creeps with temperature and must be laid in channel.
Karbate (National Carbon Division, Union Carbide Corporation, 30 East 42nd Street, New York 18, New York) (some splitting).

PUMPS

Karbate (National Carbon Division, Mechanical Seal-Water Lubricated or internal lubrication).
Glass Lined (Goulds) or Glass (Pfaudler Company).
Durichlor (Duriron Company, Inc., North Findley & Thomas Streets, Dayton, Ohio.).
Rubber (Viking Pump Co., George & Wyth Street, Cedar Falls, Iowa).
Karbate, Haveg, Teflon, Porcelain, Hastelloy

VALVES

Rubber-lined diaphragm valves.
Glass-lined, teflon diaphragm valves
Saran-lined, teflon diaphragm valves

Hills-McKanna Co., 2353 Nelson Street, Chicago 18, Illinois
Hammel-Dahl Co., 241 Richmond Street, Rhode Island

GASKETS

For Manhole gasket - soft rubber
For pipe gaskets - graphite-impregnated blue asbestos, teflon, vinyls.

Crane Packing Co., 1810 Cuyler Ave., Chicago, Illinois
Garlock Packing Co., 250 Main Street, Palmyra, New York
Johns-Manville, 22 East 40th Street, New York 16, New York

GAUGES

(Protected by Tantalum or Teflon Diaphragm)
Taylor Instrument Co., Olson & Ames Streets, Rochester, New York
Meriam Instrument Co., 10978 Madison Avenue, Cleveland, Ohio
Vehling Instrument Co., 12 Vesper Street, Paterson, New Jersey

FRONTIER CHEMICAL COMPANY
division VULCAN MATERIALS COMPANY
P. O. BOX 545 WICHITA, KANSAS / 600 DOREMUS AVENUE, NEWARK 5, NEW JERS

MURIATIC ACID
FIRST AID

HANDLE ACID WITH EXTREME CAUTION.
AVOID CONTACT WITH SKIN AND EYES.
AVOID BREATHING VAPORS. CAUSES BURNS.

SKIN CONTACT

Flood immediately with large quantities of water. Remove affected clothing while flooding contacted areas with water. Call physician. Wash until all acid is removed. DO NOT neutralize affected areas with alkaline solutions. DO NOT apply oils or ointments on burned area without specific direction from physician. Watch for symptoms of shock in cases of severe or extensive burns (rapid pulse, sweating, collapse). Place victim on back and keep warm if symptoms develop.

EYE CONTACT

Irrigate immediately with large quantities of running water for at least 15 minutes. Hold eyelids apart during irrigation to insure contact of water for all accessible tissues of eyes and lids. Call physician, preferably an eye specialist. If physician not immediately available, continue irrigation for a second 15 minute period. After first irrigation period it is permissible as a first-aid measure to instill into the eye 2 or 3 drops of 0.5% solution of Pontocaine or other equally effective aqueous topical anesthetic.

DO NOT instill oils or oily ointments unless ordered by physician.

INHALATION

Remove victim to fresh air as quickly as possible. If breathing has stopped, administer artificial respiration. Oxygen should be given by a person familiar with oxygen inhalation equipment. Keep victim comfortably warm and call physician.

To prevent development of severe lung congestion, 100% oxygen should be administered as soon as possible by a competent person after any exposure suspected of being severe. Administration should be against a positive exhalation pressure for 1/2 hour periods every hour for at least 3 hours.

Fortunately, exposed individuals usually leave the contaminated area immediately if possible, due to the irritation which is so great that it makes residence in the area intolerable. Coughing resulting from slight exposures may be relieved with application of oxygen by experienced personnel for a period of 15 to 30 minutes.

Vulcan Materials Company

CHEMICALS DIVISION / P. O. BOX 545 • WICHITA, KANSAS 67201 • TELEPHONE JA 4-4211

DILUTION TABLE FOR MURIATIC ACID

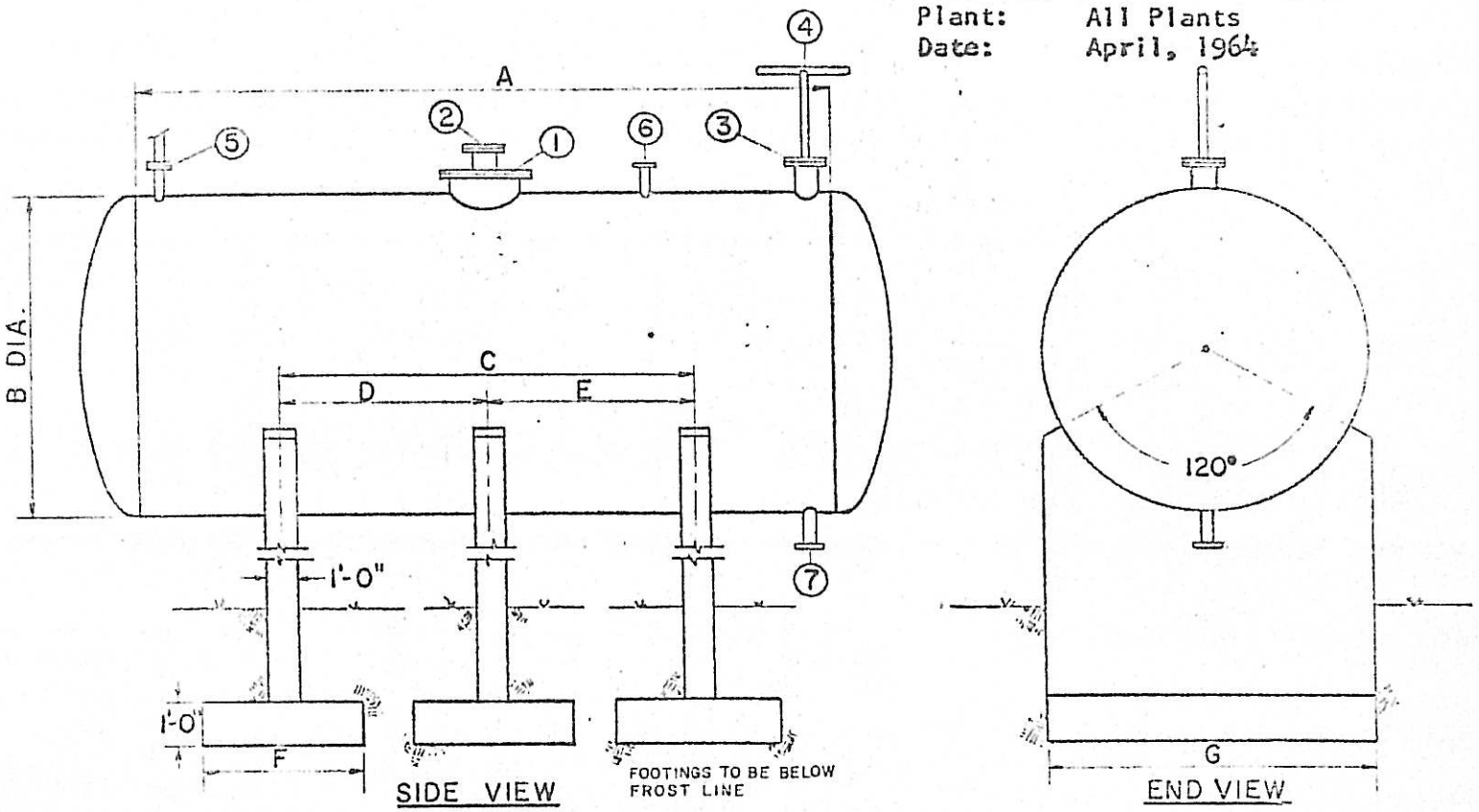
GALLONS OF ACID AND WATER TO MAKE 1000 GALLONS DILUTE ACID

STOCK ACID			DESIRED STRENGTH OF DILUTE ACID									
Strength		Sp. Gr. @	5% Acid		7½% Acid		10% Acid		15% Acid		20% Acid	
°Be.	% HCl	60° F	Acid	Water	Acid	Water	Acid	Water	Acid	Water	Acid	Water
17.5	27.07	1.1372	166	836	253	750	341	662	524	479	715	287
17.6	27.24	1.1381	165	837	251	752	339	665	520	483	710	292
17.7	27.41	1.1390	164	838	249	754	336	667	516	487	705	297
17.8	27.58	1.1399	163	839	247	755	334	669	513	490	700	302
17.9	27.75	1.1408	162	840	246	757	332	672	509	494	695	307
18.0	27.92	1.1417	161	841	244	759	329	674	506	497	690	312
18.1	28.09	1.1426	160	843	242	760	327	676	502	501	686	317
18.2	28.26	1.1435	159	844	241	762	325	678	499	504	681	322
18.3	28.44	1.1444	157	845	239	764	323	681	495	508	676	327
18.4	28.61	1.1453	156	846	237	765	320	683	492	511	672	331
18.5	28.78	1.1462	155	847	236	767	318	685	489	515	667	336
18.6	28.95	1.1471	154	848	234	769	316	687	486	518	662	341
18.7	29.13	1.1480	153	849	233	770	314	690	482	521	658	345
18.8	29.30	1.1489	152	850	231	772	312	692	479	525	653	349
18.9	29.48	1.1498	151	851	230	773	310	694	476	528	648	354
19.0	29.65	1.1508	150	852	228	775	308	696	473	531	645	358
19.1	29.83	1.1517	149	853	226	777	306	698	469	534	641	363
19.2	30.00	1.1526	148	854	225	778	304	700	466	538	636	367
19.3	30.18	1.1535	147	855	223	780	302	702	463	541	632	371
19.4	30.35	1.1544	146	856	222	781	300	704	460	544	628	375
19.5	30.53	1.1554	145	857	221	783	298	706	457	547	624	379
19.6	30.71	1.1563	144	858	219	784	296	708	454	550	620	384
19.7	30.90	1.1572	143	859	218	785	294	710	451	553	615	388
19.8	31.08	1.1581	142	860	216	787	292	712	448	556	611	392
19.9	31.27	1.1590	141	861	215	789	290	714	445	559	607	397
20.0	31.45	1.1600	140	862	[213	790]	288	716	442	562	603	401
20.1	31.64	1.1609	139	863	212	791	286	718	439	565	599	405
20.2	31.82	1.1619	139	864	210	793	284	720	436	568	595	409
20.3	32.01	1.1628	138	865	209	794	282	722	433	571	591	413
20.4	32.19	1.1637	137	866	208	795	280	724	430	574	587	417
20.5	32.38	1.1647	136	867	206	797	278	726	428	577	584	421
20.6	32.56	1.1656	135	868	205	798	277	728	425	580	580	424
20.7	32.75	1.1666	134	868	204	800	275	729	422	583	576	428
20.8	32.93	1.1675	133	869	202	801	273	731	419	585	572	432
20.9	33.12	1.1684	132	870	201	803	271	733	417	588	569	436
21.0	33.31	1.1694	132	871	200	804	270	735	414	591	565	440
21.1	33.50	1.1703	131	872	198	805	268	737	411	594	561	443
21.2	33.69	1.1713	130	873	197	806	266	738	409	596	558	447
21.3	33.88	1.1722	129	874	196	808	264	740	406	599	554	451
21.4	34.07	1.1732	128	875	195	809	263	742	403	602	550	454
21.5	34.26	1.1741	127	875	193	810	261	744	401	604	547	458
21.6	34.45	1.1751	127	876	192	812	259	745	398	607	543	462
21.7	34.64	1.1760	126	877	191	813	258	747	396	609	540	465
21.8	34.83	1.1770	125	878	190	814	256	749	393	612	537	468
21.9	35.02	1.1779	124	879	189	815	255	750	391	615	533	472
22.0	35.21	1.1789	123	879	187	816	253	752	388	617	530	475
22.1	35.40	1.1798	123	880	186	818	251	754	386	619	527	479
22.2	35.59	1.1808	122	881	185	819	250	755	384	622	524	482
22.3	35.78	1.1817	121	882	184	820	248	757	381	624	520	485
22.4	35.97	1.1827	120	883	183	821	247	758	379	627	517	489
22.5	36.16	1.1836	120	883	182	822	245	760	377	629	514	492
22.6	36.35	1.1846	119	884	181	823	244	761	374	631	511	495
22.7	36.54	1.1856	118	885	180	824	242	763	372	634	508	498
22.8	36.73	1.1866	118	885	179	826	241	764	370	636	505	501
22.9	36.93	1.1875	117	886	177	827	239	766	368	638	502	504
23.0	37.14	1.1885	116	887	176	828	238	767	365	641	499	508
23.1	37.36	1.1895	115	888	175	829	236	769	363	643	495	511
23.2	37.58	1.1904	115	889	174	830	235	771	360	646	492	515
23.3	37.80	1.1914	114	889	173	832	233	772	358	648	489	518
23.4	38.03	1.1924	113	890	172	833	232	774	356	651	485	522
23.5	38.26	1.1934	112	891	170	834	230	776	353	654	482	525

EXAMPLE: To make 1000 gallons 7½% dilute acid from 20 °Be. stock acid, use 213 gallons of stock acid and 790 gallons water (see bracketed figures in 20.0 line above). Although gallons of acid plus gallons of water total more than 1000 gallons, only 1000 gallons of dilute acid will result when mixed.

VULCAN MATERIALS COMPANY
ENGINEERING STANDARDS

NO: F-E7-106-0
Division: Frontier Chemical
Plant: All Plants
Date: April, 1964



RUBBER LINED MURIATIC ACID STORAGE TANK

5000 GAL. TANK

A	B	C	D	E	F	G
22'	6'-0"	13'-2"	—	—	4'-0"	6'-0"
18'	6'-6"	10'-10"	—	—	3'-8"	6'-6"
15'	7'-0"	9'-0"	—	—	3'-6"	7'-0"

10000 GAL. TANK

A	B	C	D	E	F	G
34'	7'-0"	20'-4"	10'-2"	10'-2"	3'-0"	7'-0"
26'	8'-0"	15'-6"	7'-9"	7'-9"	2'-6"	8'-0"
22'	8'-6"	13'-0"	6'-6"	6'-6"	2'-0"	9'-0"

NOZZLES

1. 18" I.D. - 150 # W/BLIND FLANGE BORED TO 6.75" DIA.
2. 6"-150# QUICK OPENING GAGE NOZZLE
3. 6"-150 # DROP VALVE NOZZLE
4. DROP VALVE
5. 2"-150 # VENT NOZZLE
6. 1"-150 # NOZZLE FOR 30 PSI AIR PAD
7. 3"-150 # OUTLET NOZZLE

NOTES

CENTER CONCRETE PIER AND FOOTING IS NOT NECESSARY IF 5000 GAL. TANK IS CHOSEN.

DO NOT WELD ATTACHMENTS TO TANK AFTER IT HAS BEEN LINED.

NOTES

ALL INSIDE SURFACES OF TANK TO BE LINED W/ 3/16" THK. SOFT RUBBER & ALL JOINTS OVER WHICH RUBBER IS TO BE APPLIED MUST BE CONTINUOUS WELDED AND GROUND SMOOTH.

VESSEL SHELL TO BE 1/4" THK. FOR 5000 GAL. TANK & 5/16" THK. FOR 10000 GAL. TANK ASTM A-285 GR. C STEEL

HEAD FOR 5000 GAL. TANK TO BE 5/16" THK. & HEADS FOR 10000 GAL. TANK TO BE 3/8" ASTM A-285 GR. C STEEL

VESSEL DESIGN SPEC 75 PSIG @ 150°F

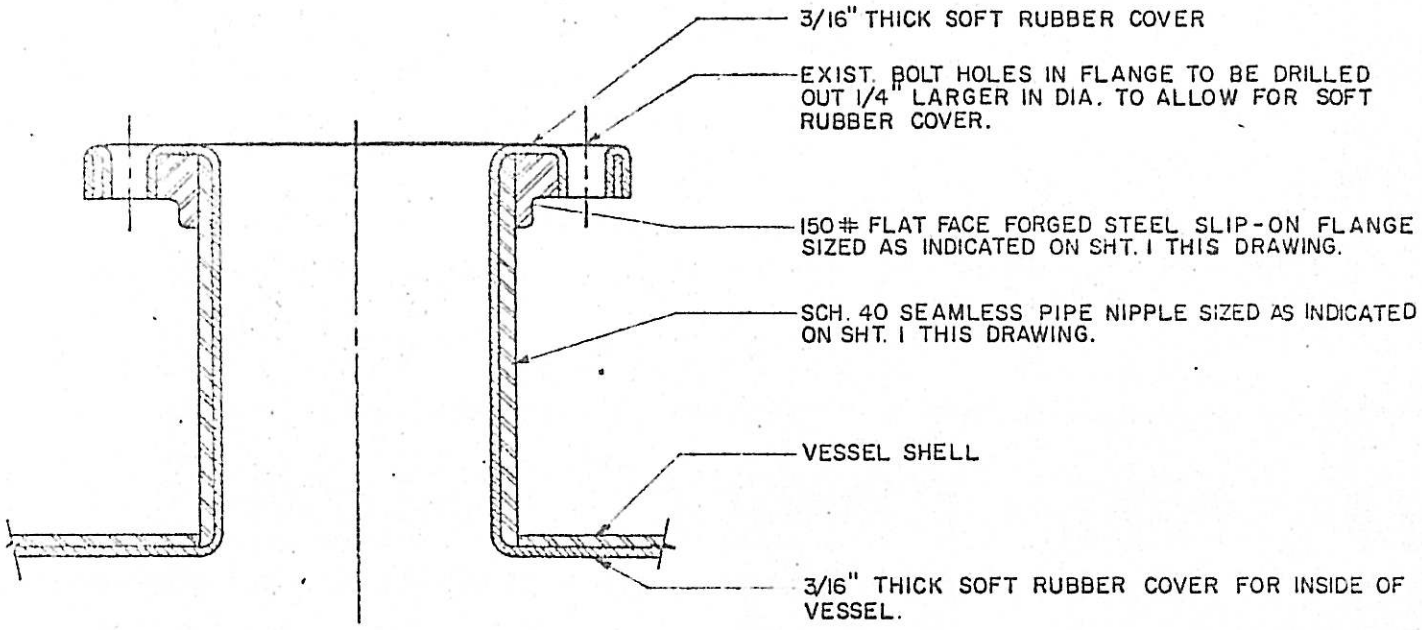
VESSEL CONSTRUCTION TO CONFORM TO LATEST EDITION OF ASME CODE FOR UNFIRED PRESSURE VESSELS

NOZZLE PROJECTION TO BE 8" FROM VESSEL WALL TO FACE OF FLANGE

ALL FLANGES TO BE 150# FLAT FACED FORGED STEEL RUBBER COVERED

FOUNDATIONS TO HAVE A MIN. OF # 4 REBAR ON 16" CTR'S. VERTICALLY IN BOTH FACES OF PIERS W/ # 4 TIES ON 16" CTR'S & # 4 REBARS ON 16" CTR'S HORIZONTALLY BOTH WAYS, 3" FROM BOTTOM OF FOOTING

FOOTINGS DESIGNED FOR 2000 PSF MAX SOIL LOADING & IS SUITABLE ONLY FOR FIRM SOIL.



TYPICAL NOZZLE DETAIL

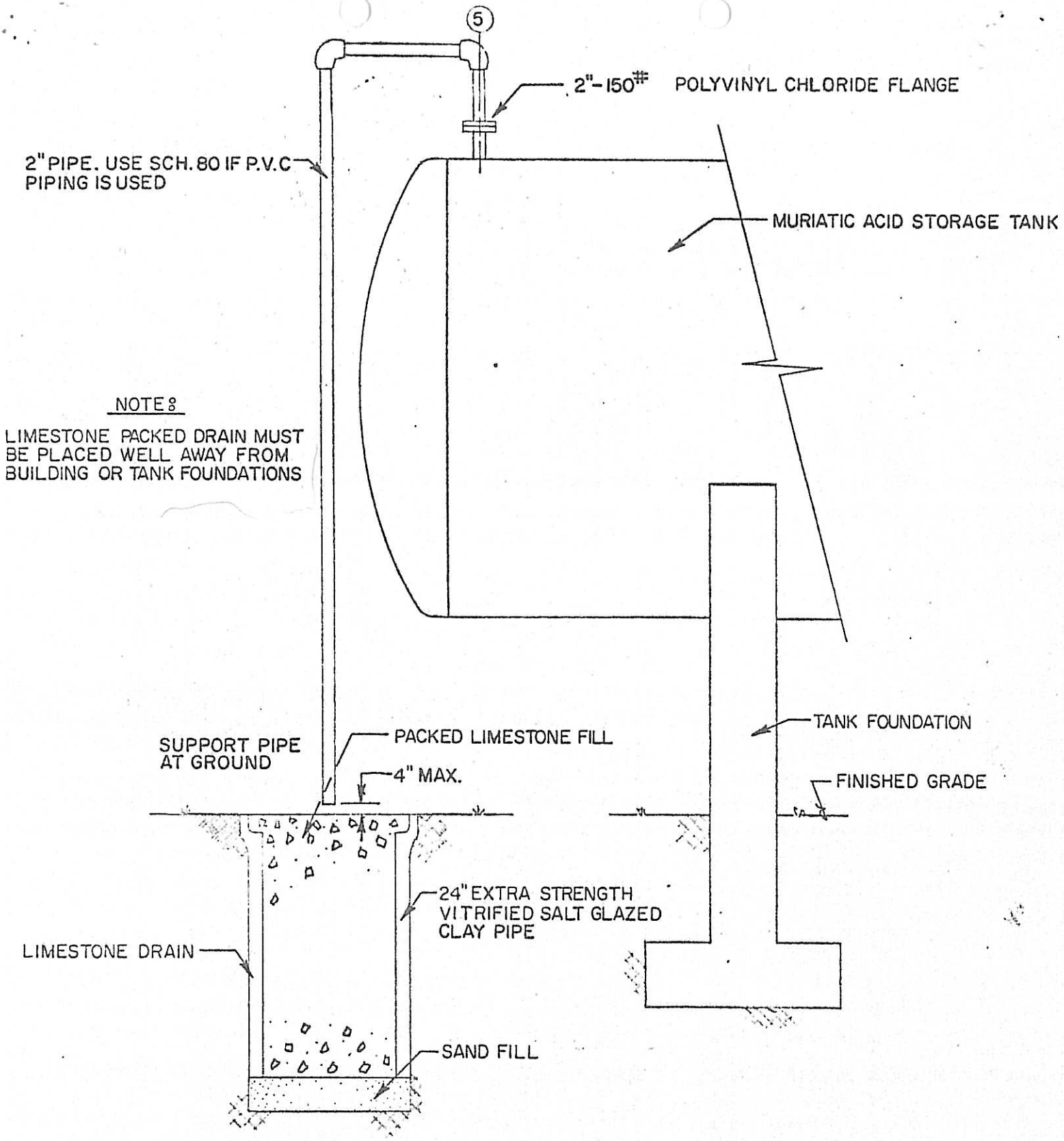
NOTES

ALL WELDS MUST BE CONTINUOUS AND GROUND SMOOTH BEFORE APPLYING SOFT RUBBER LINING

AFTER MANWAY NOZZLE (1) AND QUICK OPENING GAGE NOZZLE (2) ARE INSTALLED AS SHOWN ON SHEET 1. THEY ARE TO BE COATED WITH SOFT RUBBER AS SHOWN ON THIS SHEET.

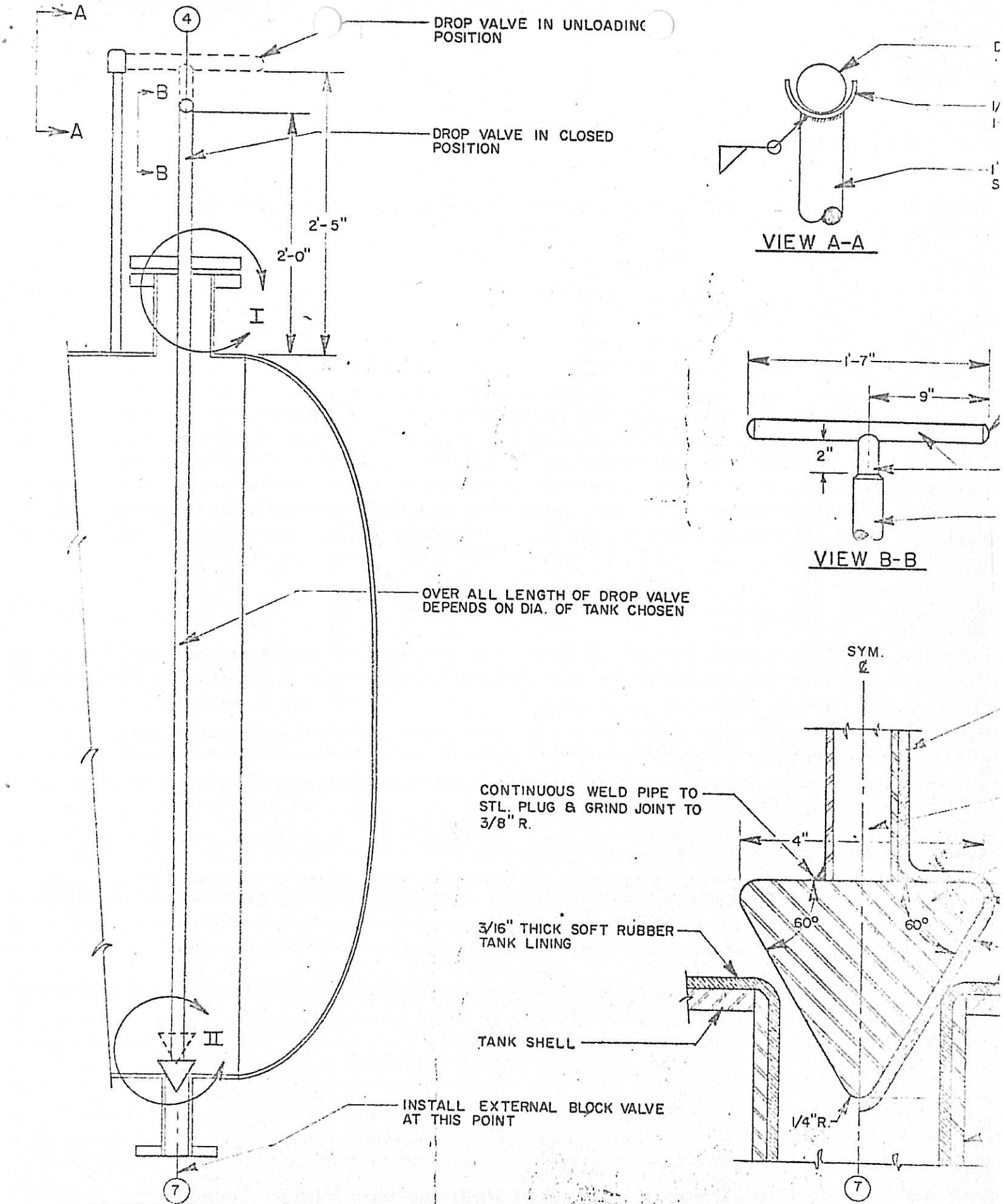
ALL EDGES OVER WHICH SOFT RUBBER IS TO BE APPLIED MUST BE ROUNDED OFF AND GROUND SMOOTH

ALL BOLT HOLES TO STRADDLE NATURAL CENTERLINES



SUGGESTED METHOD FOR VENTING MURIATIC ACID STORAGE TANKS

NOT REQUIRED IF AIR PADDING IS USED



SECTIONAL VIEW
TYPICAL RUBBER LINED
MURIATIC ACID STORAGE TANK

SECTION
DETAIL II

ALVE HANDLE

STEEL PLATE BENT ON

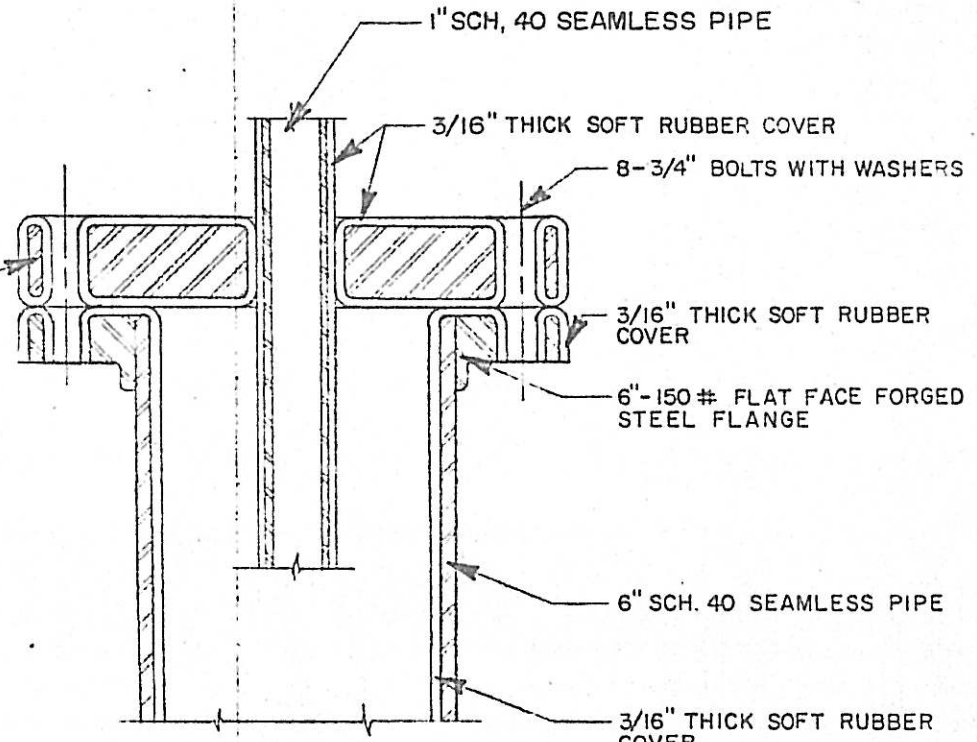
O SEAMLESS PIPE DROP VALVE
T

FABRICATE PLATE FLANGE W/11" O.D. AND 2-3/16" BORE. DRILL 8 - 1-1/16" O.D. HOLES ON 9-1/2" DIA. BOLT CIRCLE ROUND OFF ALL SHARP EDGES OF FLG.

GRIND OFF SHARP EDGES

1" SCH. 40 SEAMLESS PIPE

3/16" THICK SOFT RUBBER COVER



SECTION
DETAIL I

3/16" THICK SOFT RUBBER COVER

1" SCH. 40 SEAMLESS PIPE

STEEL PLUG FABRICATED TO DIM. SHOWN

5/16" R

3/16" THICK SOFT RUBBER COVER

3 5/8"

3" SCH. 40 SEAMLESS PIPE

NOTES

ALL BOLT HOLES TO STRADDLE NATURAL CENTER LINES

ALL JOINTS OVER WHICH RUBBER IS TO BE APPLIED MUST BE CONTINUOUS WELDED AND GROUND SMOOTH BEFORE APPLYING RUBBER

THE DROP IS TOBE INTHE OPEN POSITION ONLY WHEN TRANSFERING ACID AND THEN AFTER MAIN OUTLET VALVE (DIAPHRAGM) HAS BEEN OPENED.

DO NOT WELD ATTACHMENTS TO TANK AFTER IT HAS BEEN LINED

FRONTIER CHEMICAL COMPANY WICHITA, KANSAS
RUBBER LINED DROP VALVE — MURIATIC ACID STORAGE TANK

MURIATIC ACID STORAGE

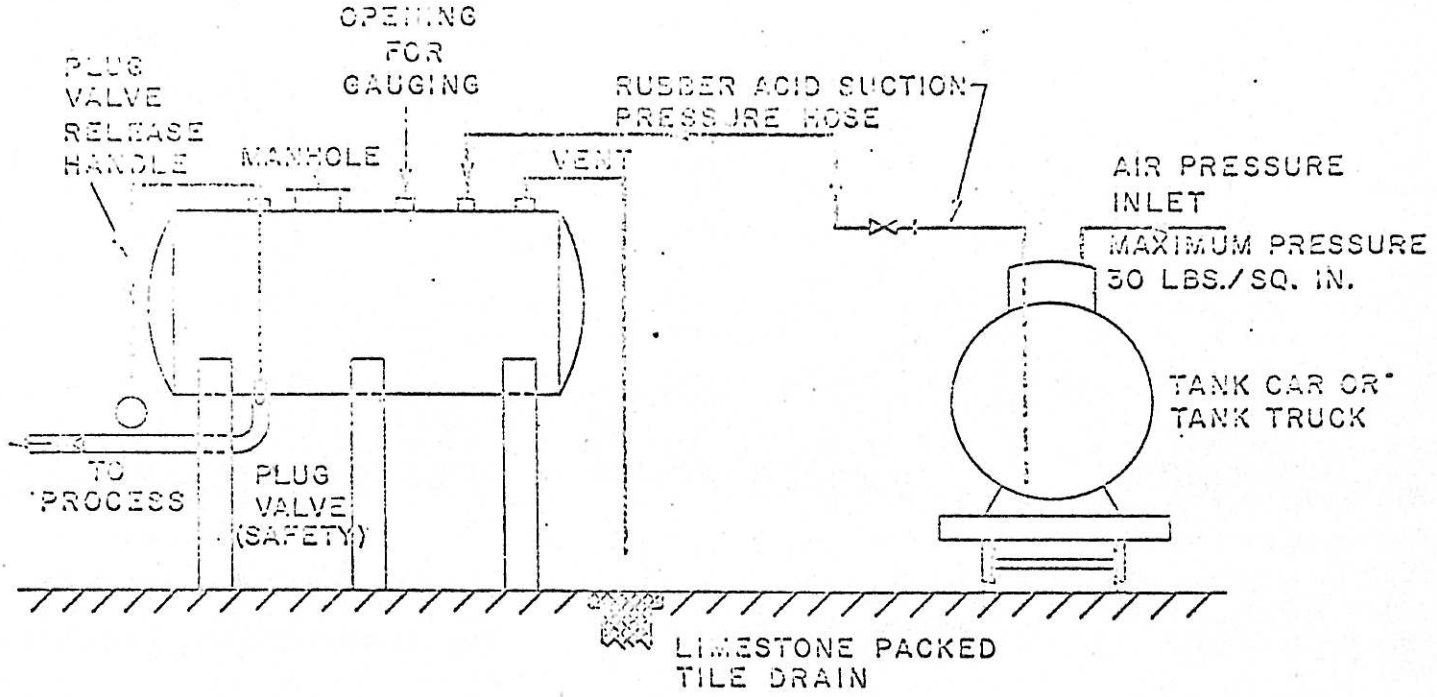


FIGURE 1
GRAVITY FLOW TO PROCESS

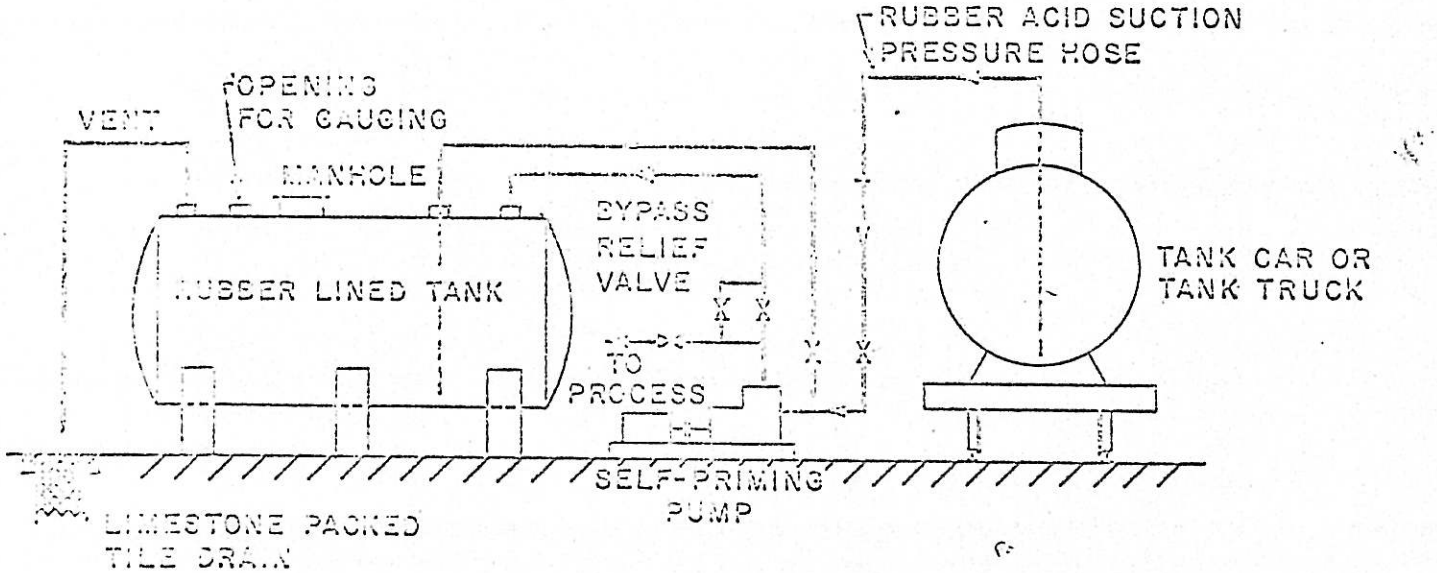


FIGURE 2
PUMP DELIVERY